The effects of livestock grazing on sage-grouse population dynamics in central Montana

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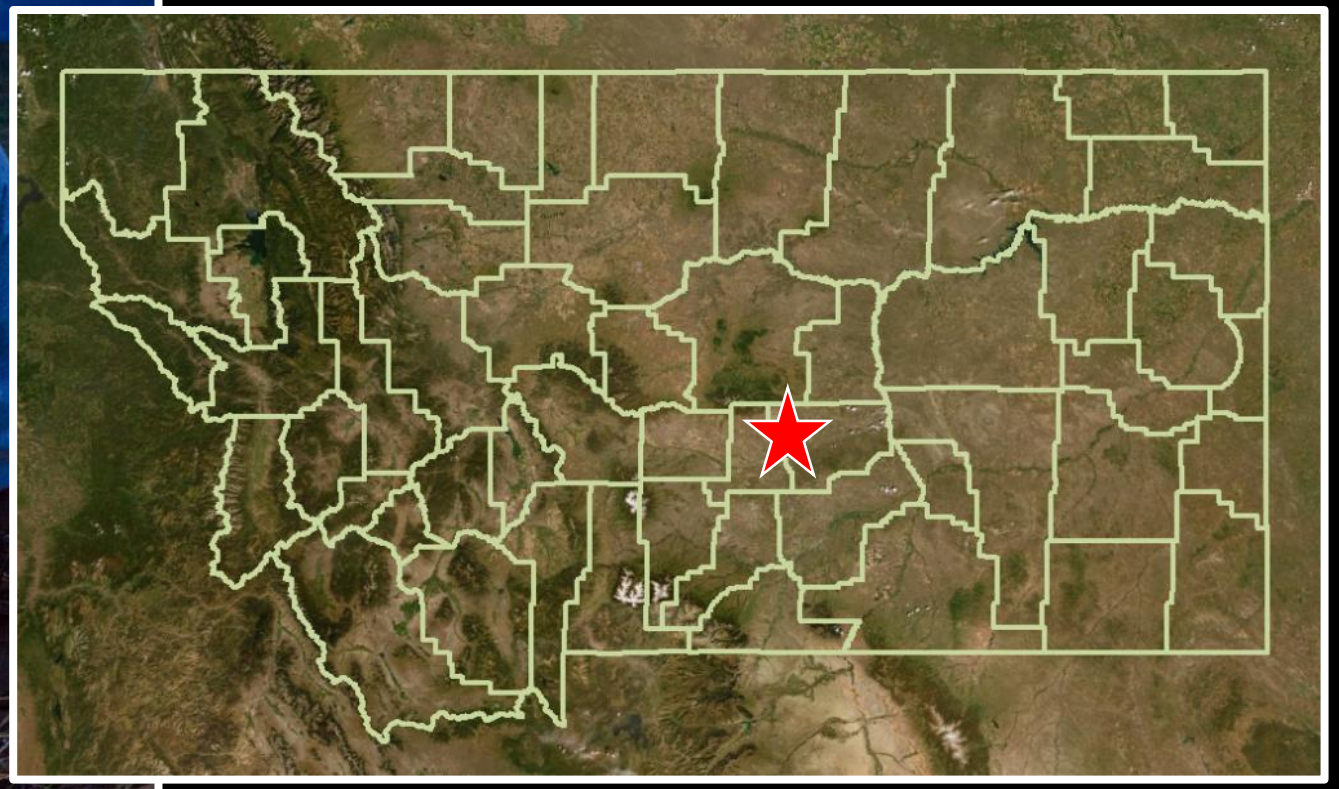
Sage Grouse Initiative (SGI)

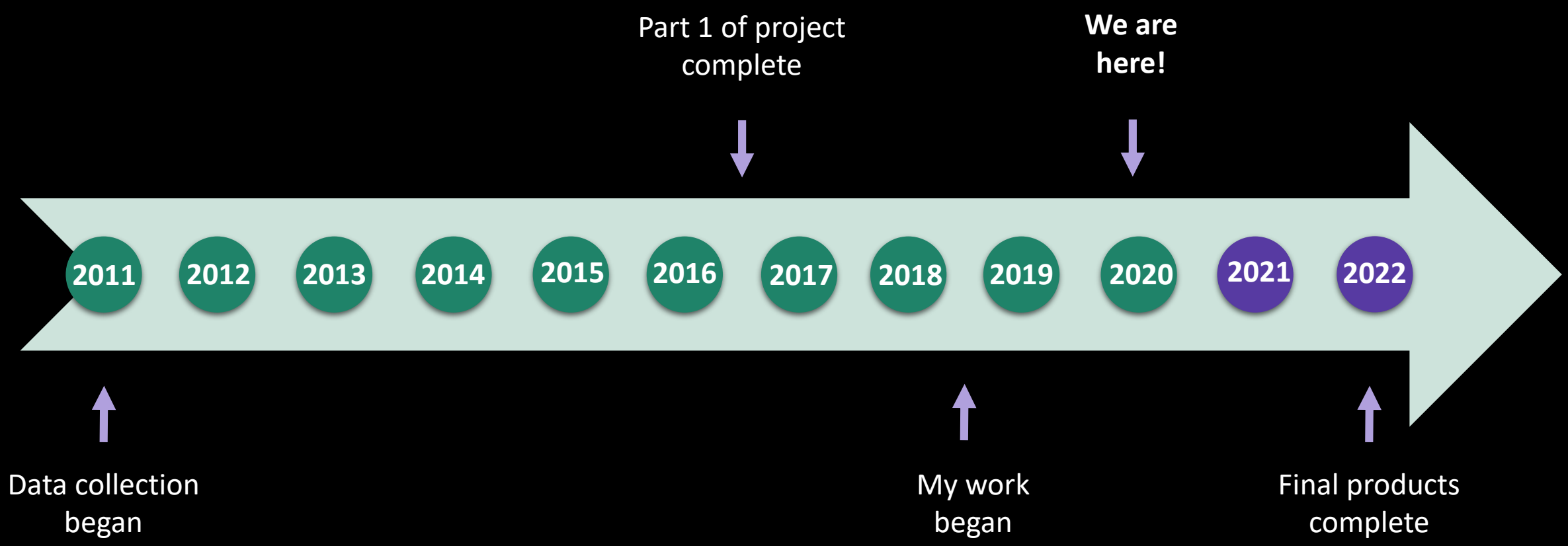
- Program of Natural Resources Conservation Service (NRCS)
- Voluntary participation by land owners
- Rotational grazing systems as tool to manage vegetation
- Timing of grazing

Roundup sage-grouse study

Kenton Rowe



Ten years of data collection



Our grazing data

- Collaboration with 40+ private land owners
- SGI grazing enrollment
- Detailed timing of grazing
- Vegetation metrics

Primary Objectives

Determine effects of grazing on sage-grouse vital rates.

Identify high-quality seasonal habitat for sage-grouse.

Delineate priority habitat for conservation.

Vital rates

Nest survival

Chick survival

Hen survival

Taylor et al. 2012

Habitat components

Vegetation

Livestock grazing

Weather

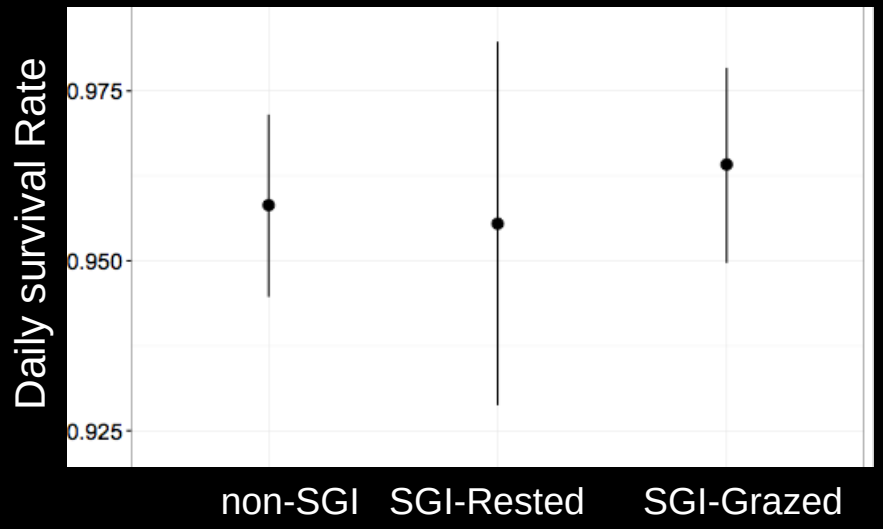
Vital rates and habitat

Nest survival

No effect of livestock use

No effect of livestock presence

No effect of grazing system



Smith et al. 2018

Vital rates and habitat

Nest survival

No effect of livestock use

No effect of livestock presence

No effect of grazing system

Chick survival

Work in progress.

Hen survival

Work in progress.

Smith et al. 2018

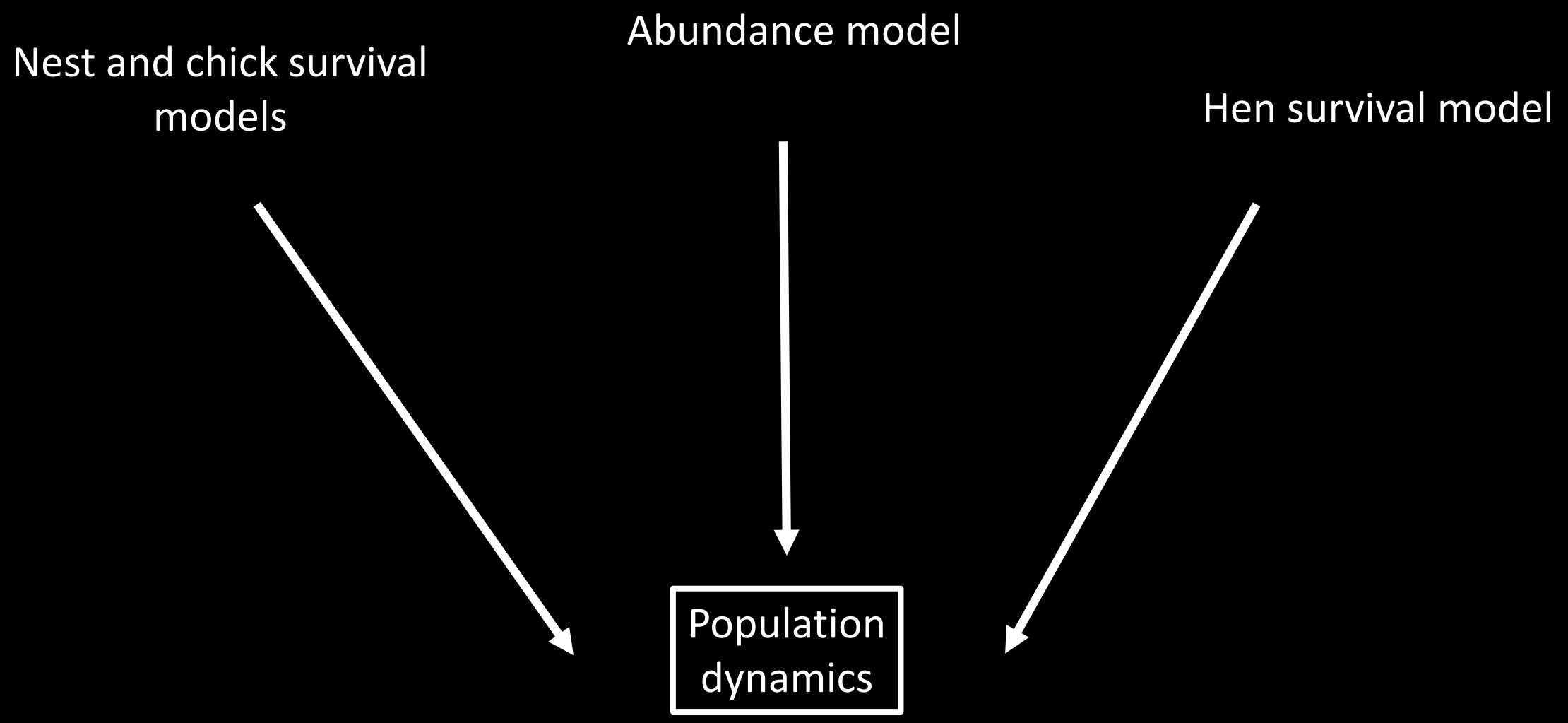
Habitat and population trends

Combine influences of habitat on vital rates

Explore changes in abundance over time

Directly link habitat, including grazing, to population trends

Habitat and population trends



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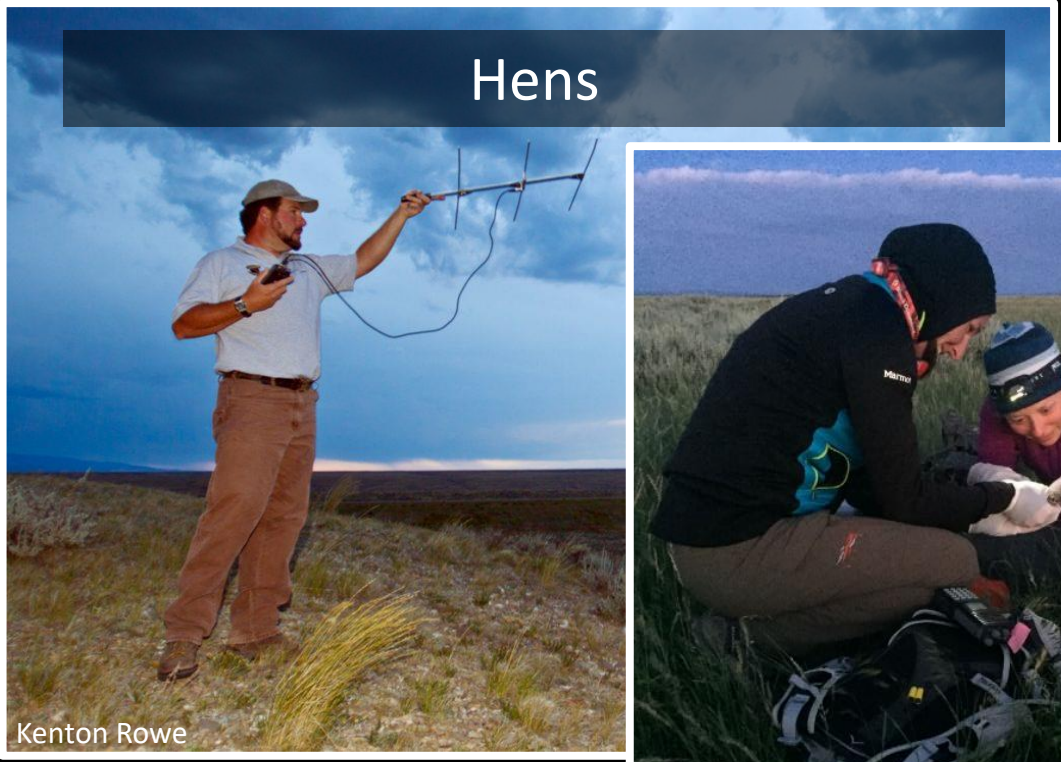
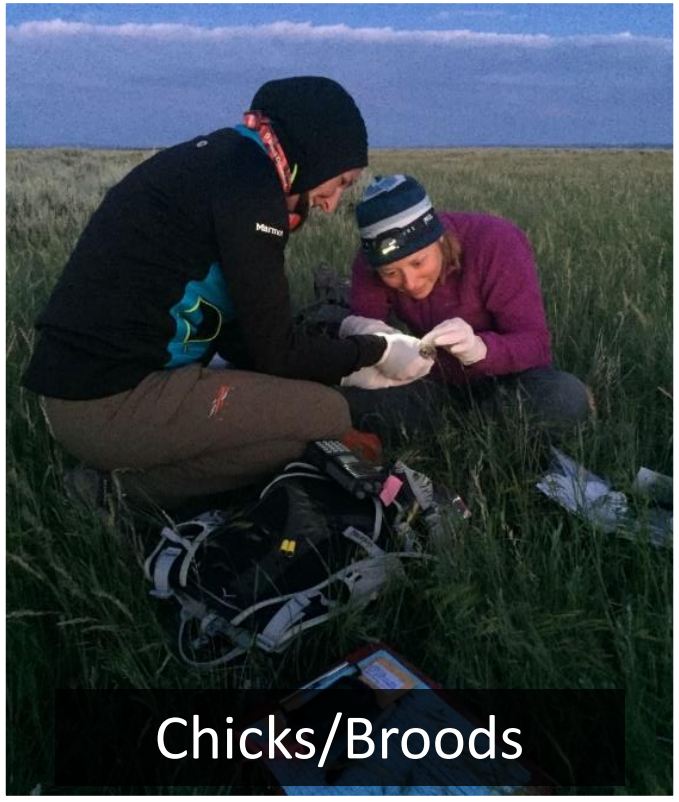
High-quality seasonal habitat





- Nest sites – building from Smith et al. 2018
- Chick/brood habitat
- Hen seasonal habitat

High-quality seasonal habitat

- Develop maps identifying:
  - Areas of probable use
  - Areas important for vital rates and abundance

Summary

Determine effects of grazing on sage-grouse vital rates.

Identify high-quality seasonal habitat for sage-grouse.

Delineate priority habitat for conservation.

Acknowledgements

Joe Smith

Dave Naugle

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Field technicians

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